DGPS

Input Module (8)

XML

SSL

Wireless Network (6)

Lockmaster Display (4)

Pilot Display (4)

Figure 1 Schematic of the Present Invention's Architecture

Tow

TTS MODULE 106

107

S 104

INPUT MOD. 102

S 104

2

PILOT DISPLAY MODULE 100

INPUT MODULE 103

105

S

105

S

6

S 104

INPUT MODULE 102

S 104

99

4

LOCK MASTER DISPLAY MODULE 110

104

S

INPUT MODULE 102

TTS 106

107

INPUT MODULE 108

INTERNET

Lock

FIG. 2.

Smart Lock

16

14

Yagi (directional)

Omni directional

Smart vessels

10

10

10

1

12

Point to Point

Point to multi-Point
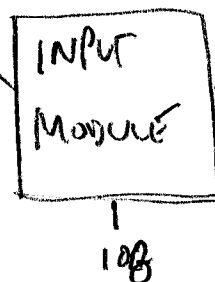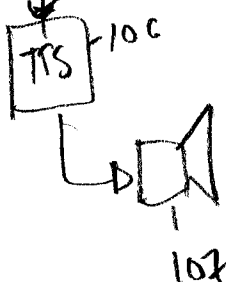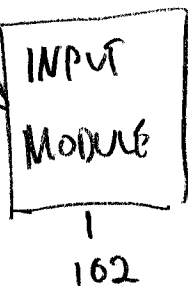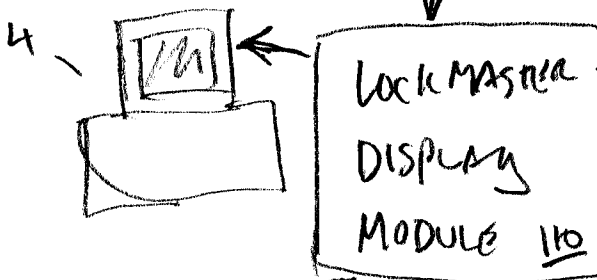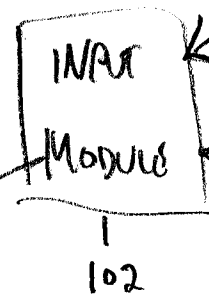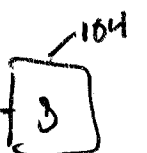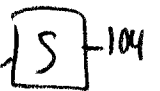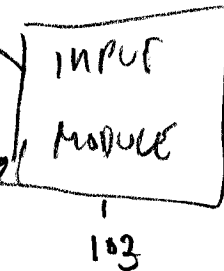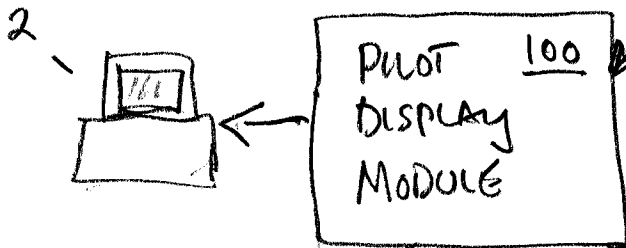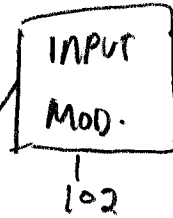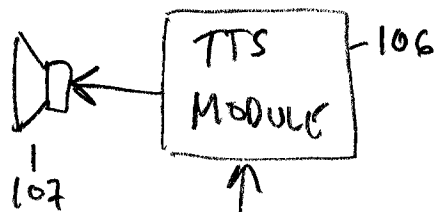
Figure 7-2. SmartLock System Network Topology

FIG. 3

(20)

Towboat No: PRV1635678

Towboat Name: Elaine G

Towboat Type: Trip Boat

Towboat Size

Length: 55 feet

Width: 24 feet

Save   Cancel

Figure 4 Towboat Setup

SmartLock: Configure Tow (3 of 3)

Lash Barges

Drag barges onto the outline.

9   Standard Barges

2   Stumbo Barges

Length: 370   feet
Width: 52   feet

< Back   Finished   Cancel

Figure 5 Configure Tow

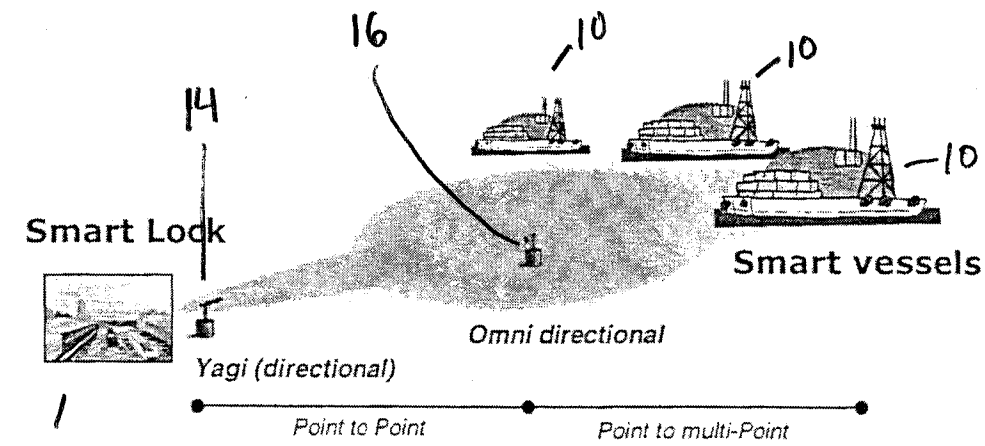SmartLock: Request Lockage   X

Lock: EMSWORTH (OH-01)

Chamber: Landward   ▼

Feedback? ● Yes ○ No

Save   Cancel
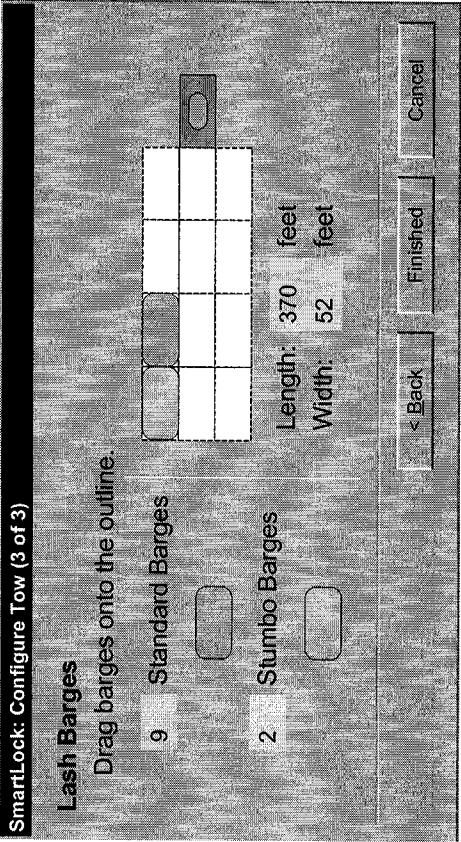
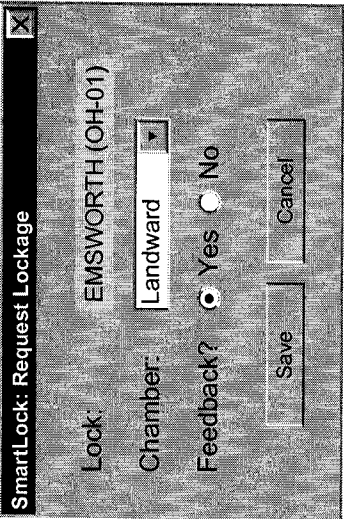**Figure 6** Request Lockage

SmartLock: Lock Conditions ☒

Dam Opening: 10 ▲ feet

Upstream River Current

Direction: ● In ○ Out

Strength: |Weak ▼|

Downstream River Current

Direction: ● In ○ Out

Strength: |Weak ▼|

Wind

Direction: |North ▼|

Strength: |Weak ▼|

| Update | Cancel |

Figure 7 Update Lock Conditions

SmartLock: Pilot Controller

Towboat Setup   Set Preferences   View Logs

(60) ⬇ Configure Tow   (62) 🏛 Request Lockage| 📧 Request Training   ⬆ Get Feedback

Emsworth Lock (OH-01)

▭▭ 20-ft dam opening

〰 Weak outward current

◇ Medium north winds

(32)

(46)
(40)
(44)

(12)

(42)

(37)

1,200 feet from guide wall

240 feet from banks

(33)

(10)

(31)

(64) 🔍 Zoom In   (66) 🔍 Zoom Out
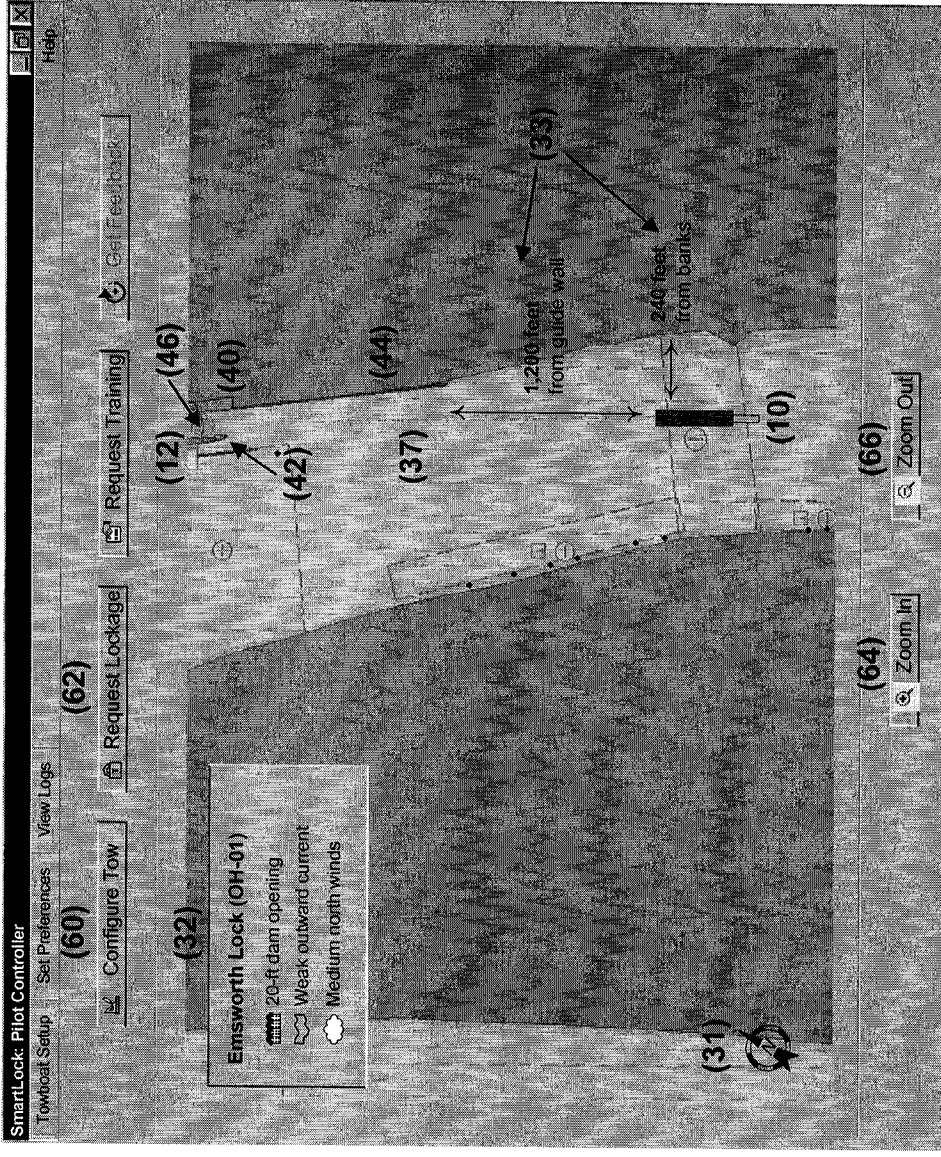
Figure 8 Pilot Display for Tow Approaching the Lock

(34)

SmartLock: Pilot Controller

Towboat Setup   Set Preferences   View Logs   Help

(60)   (62)

🖥 Configure Tow   ⚓ Request Lockage   📧 Request Training   🕐 Get Feedback

(32)

Emsworth Lock (OH-01)   ☒

▦ 20-ft dam opening
▽ Weak outward current
❄ Medium north winds

(31)

(40)

(46)

(42)

(44)

435 feet
from bullnose

(33)

Head: 10 feet
from wall

Stern: 11 feet
from wall

(10)
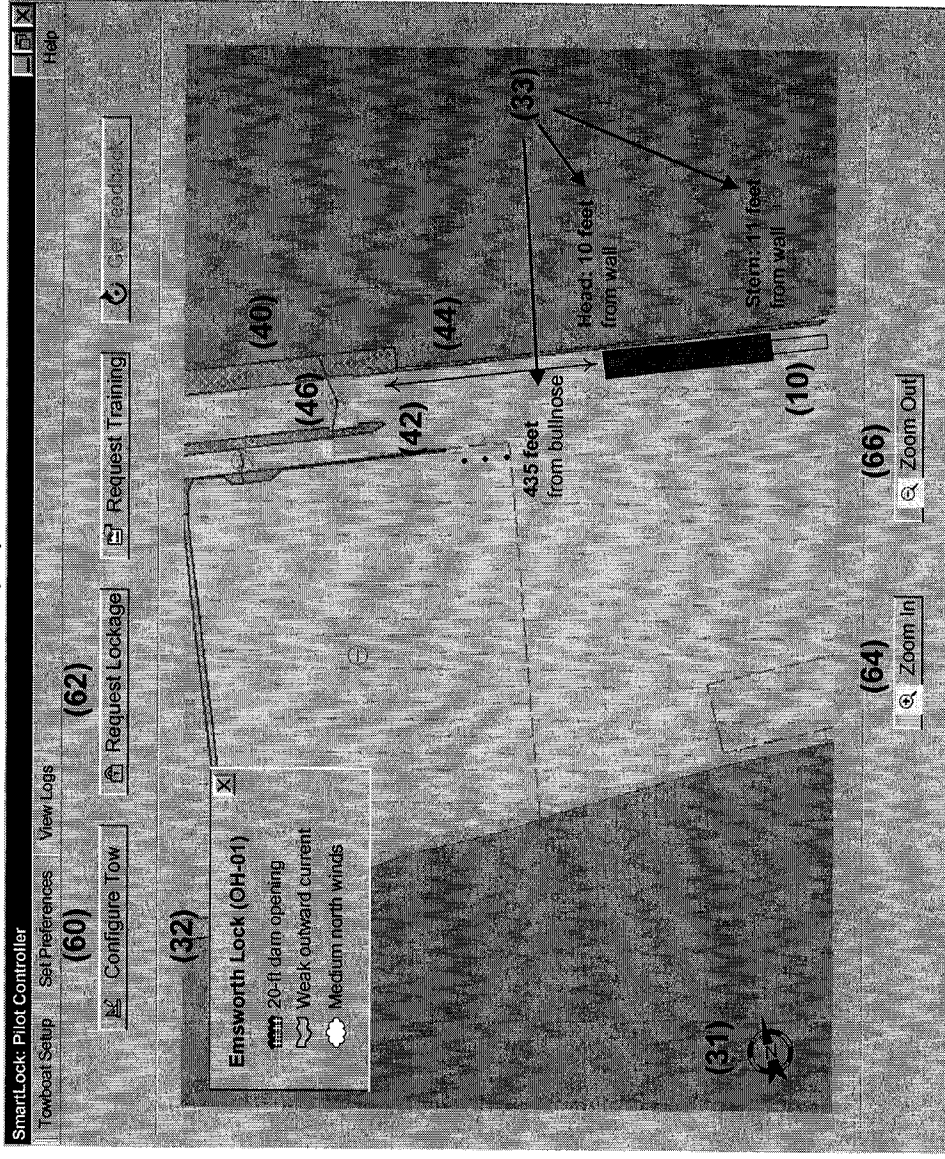
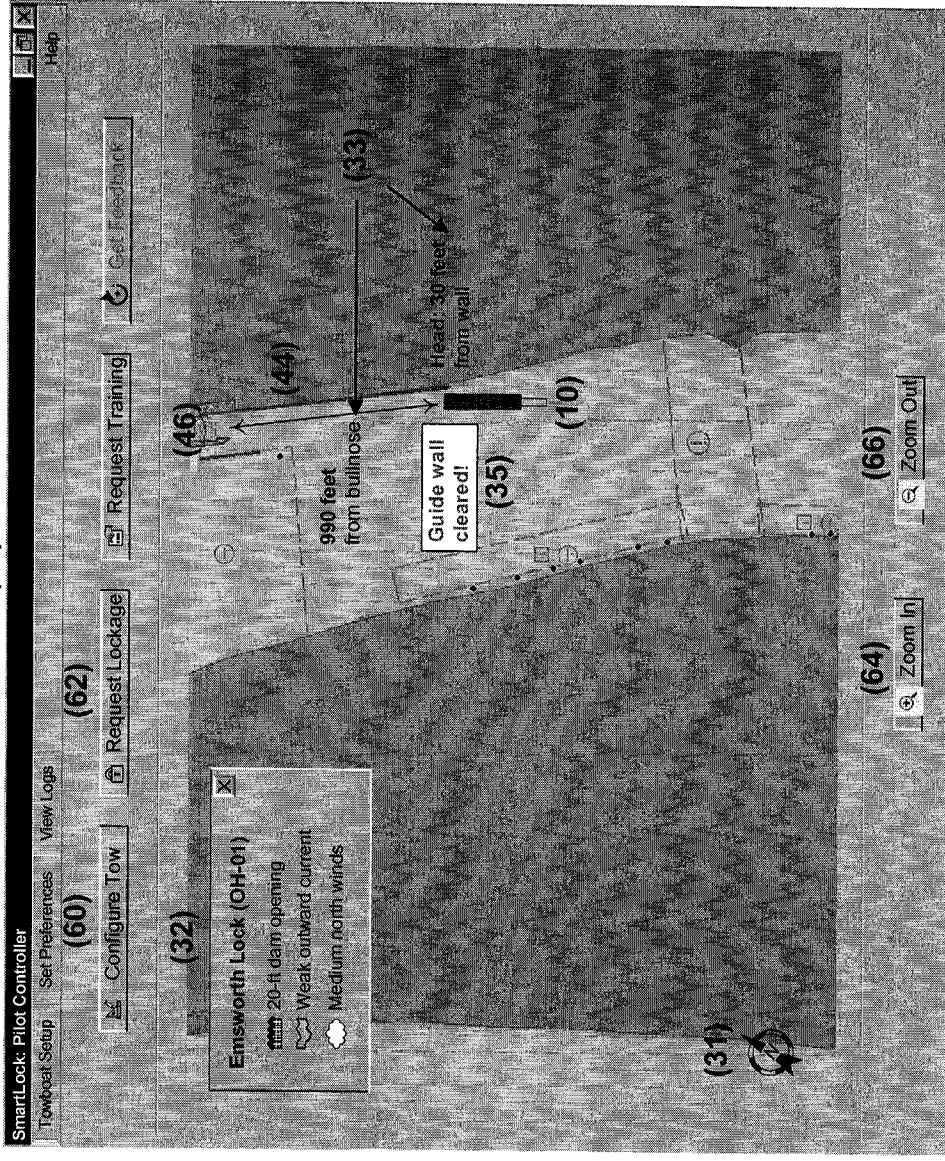(64) 🔍 Zoom In   (66) 🔍 Zoom Out

Figure 9 Pilot Display for Tow at the Lock

Figure 10 Pilot Display with Sample Alert
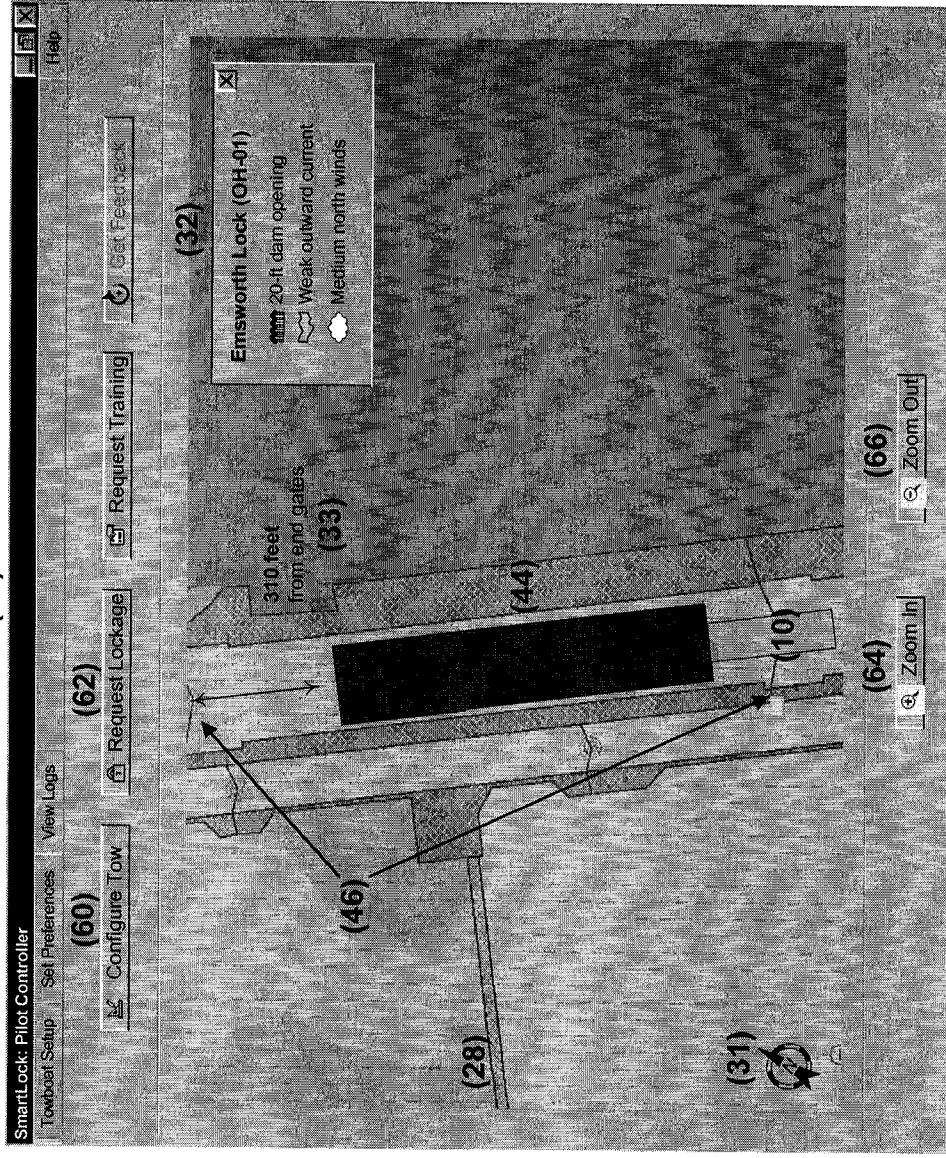
Figure 11 Pilot Display with Tow Inside the Lock
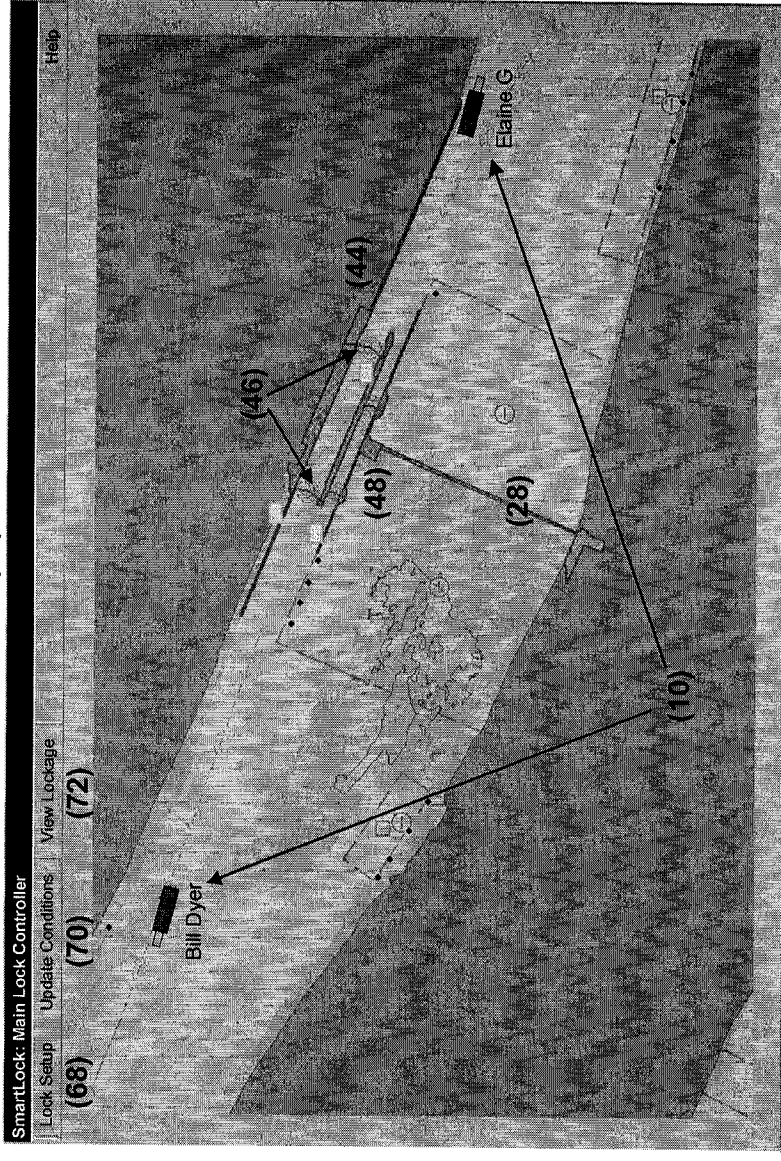
Figure 12 Lockmaster Display

FIG. 13